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(54) **SYSTEM AND METHOD TO MANAGE SUPPLY CHAIN SETTLEMENT, RISK AND LIQUIDITY**

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(51) **Int. Cl.**

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G07B 17/00 (2006.01)
G07F 19/00 (2006.01)

(52) **U.S. Cl.** **705/26.1**; 705/30

(58) **Field of Classification Search** 705/26, 705/34

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,717,989	A	2/1998	Tozzoli et al.	
5,910,987	A *	6/1999	Ginter et al.	705/52
6,151,588	A	11/2000	Tozzoli et al.	
6,895,388	B1 *	5/2005	Smith	705/26
7,006,993	B1 *	2/2006	Cheong et al.	705/38
7,016,859	B2 *	3/2006	Whitesage	705/8
7,069,230	B2	6/2006	Krystek et al.	
7,069,234	B1 *	6/2006	Cornelius et al.	705/26
7,194,431	B1 *	3/2007	Land et al.	705/30
7,212,976	B2	5/2007	Scheer	
7,319,986	B2 *	1/2008	Praisner et al.	705/39
7,333,942	B1 *	2/2008	Cowles	705/26
7,536,336	B1 *	5/2009	Guinan	705/37
2002/0143692	A1 *	10/2002	Heimermann et al.	705/37
2002/0178077	A1 *	11/2002	Katz et al.	705/26
2003/0139975	A1 *	7/2003	Perkowski	705/26
2003/0208410	A1 *	11/2003	Silverbrook et al.	705/26
2005/0075941	A1 *	4/2005	Jetter et al.	705/26

OTHER PUBLICATIONS

Setting up a paperless office. (includes price list and directory of document imaging software and hardware) Hunton, James E. Journal of Accountancy , 178 , n5 , 77(6) Nov. 1994.*

Bank of America Corporation, International Preliminary Report on Patentability, corresponding to International Patent Application No. PCT/US2004/030632, dated Dec. 6, 2007.

* cited by examiner

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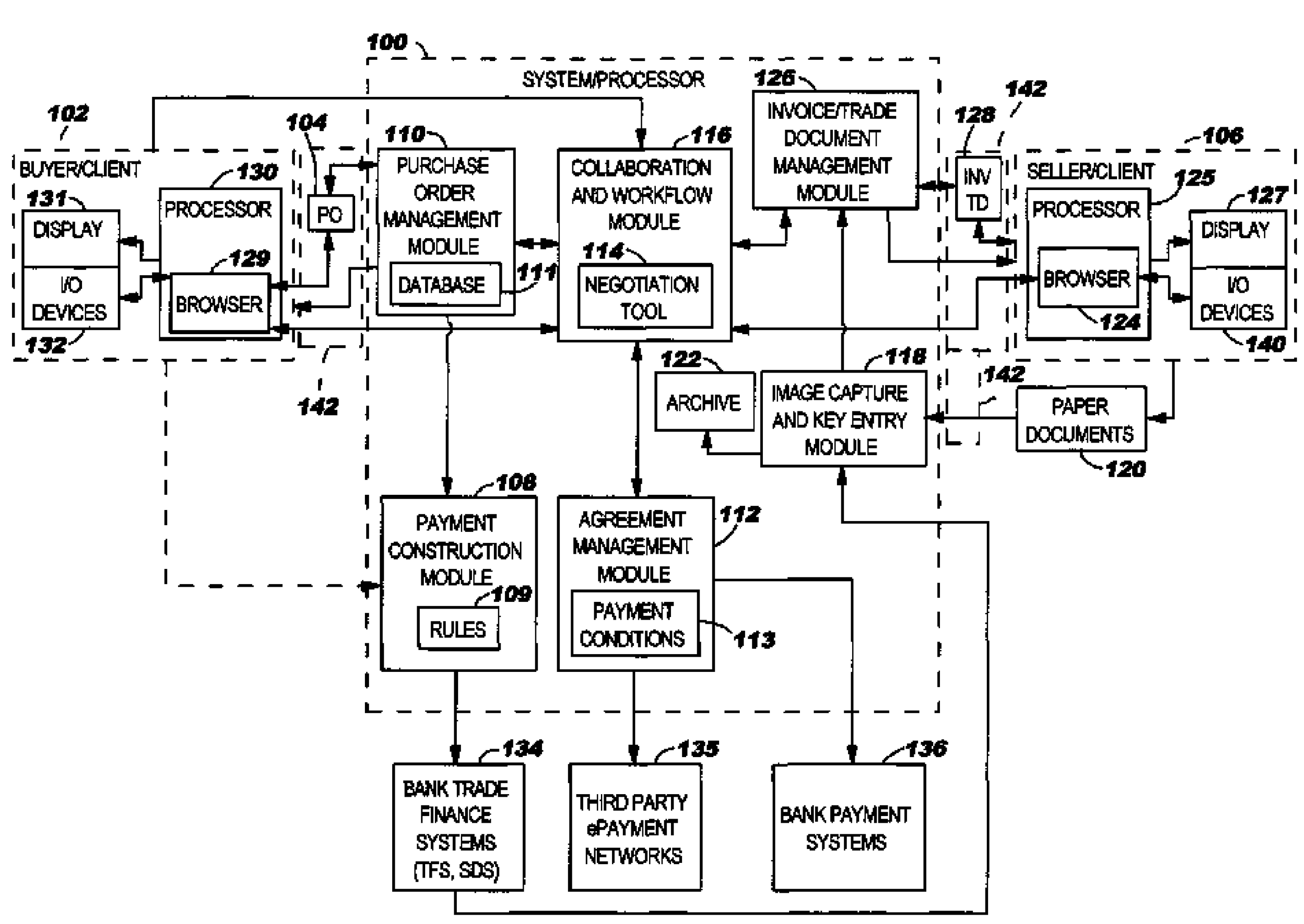
(57) **ABSTRACT**

A system to manage a supply chain may include a purchase order management module operable on a processor to electronically receive purchase order information from a buyer and to store and track information associated with each purchase order. The system may also include an invoice and trade document management module to electronically store, aggregate and manage invoices and trade documents related to each purchase order and information required for presentment and reconciliation of each purchase order.

55 Claims, 5 Drawing Sheets



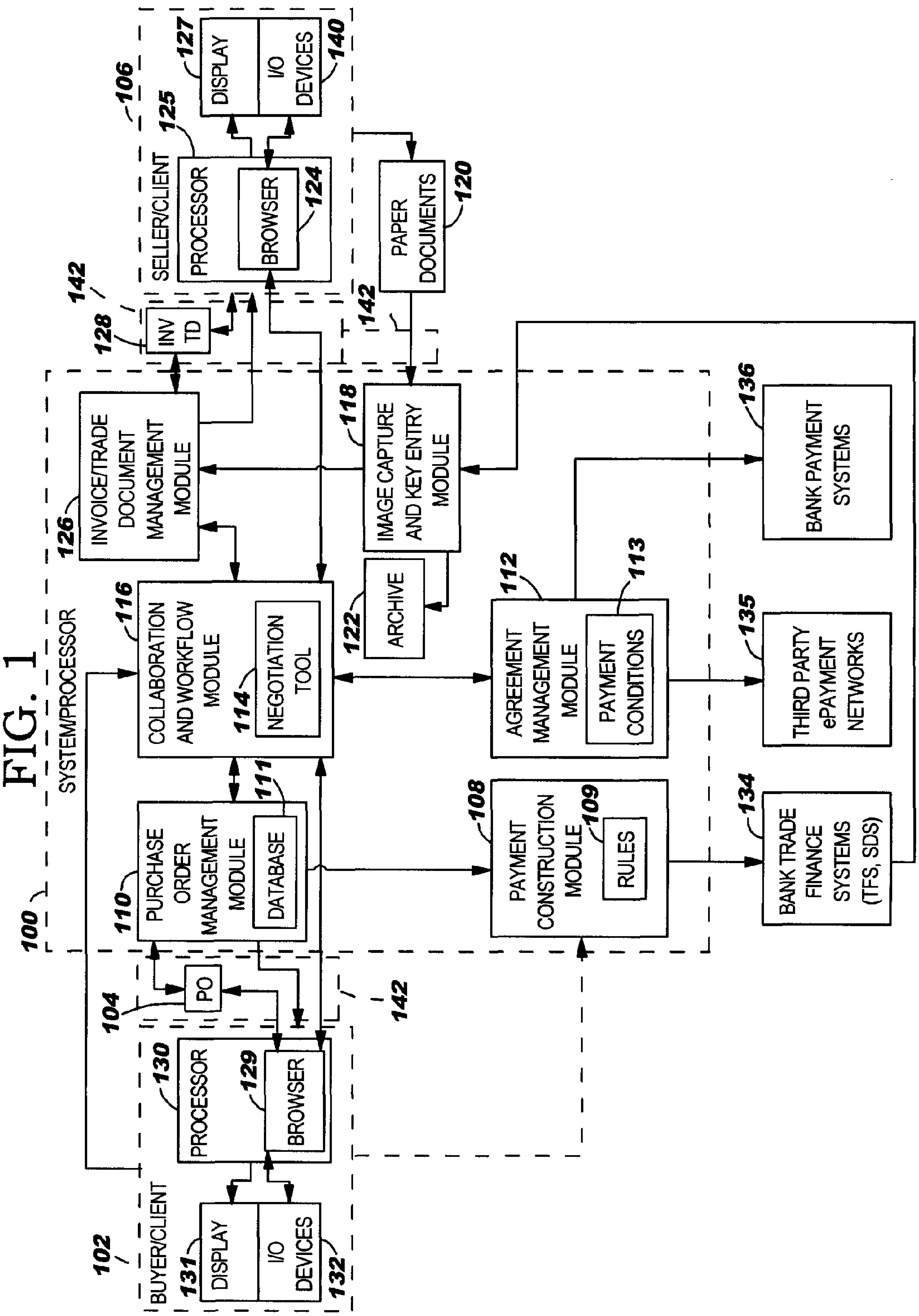

SYSTEM/PROCESSOR
100
SELLER/CLIENT
106
PROCESSOR
125
BROWSER
124
DISPLAY
127
I/O DEVICES
140
PAPER DOCUMENTS
120
INV TD
128
142
INVOICE/TRADE DOCUMENT MANAGEMENT MODULE
126
IMAGE CAPTURE AND KEY ENTRY MODULE
118
ARCHIVE
122
COLLABORATION AND WORKFLOW MODULE
116
NEGOTIATION TOOL
114
AGREEMENT MANAGEMENT MODULE
112
PAYMENT CONDITIONS
113
PURCHASE ORDER MANAGEMENT MODULE
110
DATABASE
111
PAYMENT CONSTRUCTION MODULE
108
RULES
109
BANK PAYMENT SYSTEMS
136
THIRD PARTY ePAYMENT NETWORKS
135
BANK TRADE FINANCE SYSTEMS (TFS, SDS)
134
PO
104
BUYER/CLIENT
102
PROCESSOR
130
BROWSER
129
DISPLAY
131
I/O DEVICES
132

FIG. 1

FIG. 2A

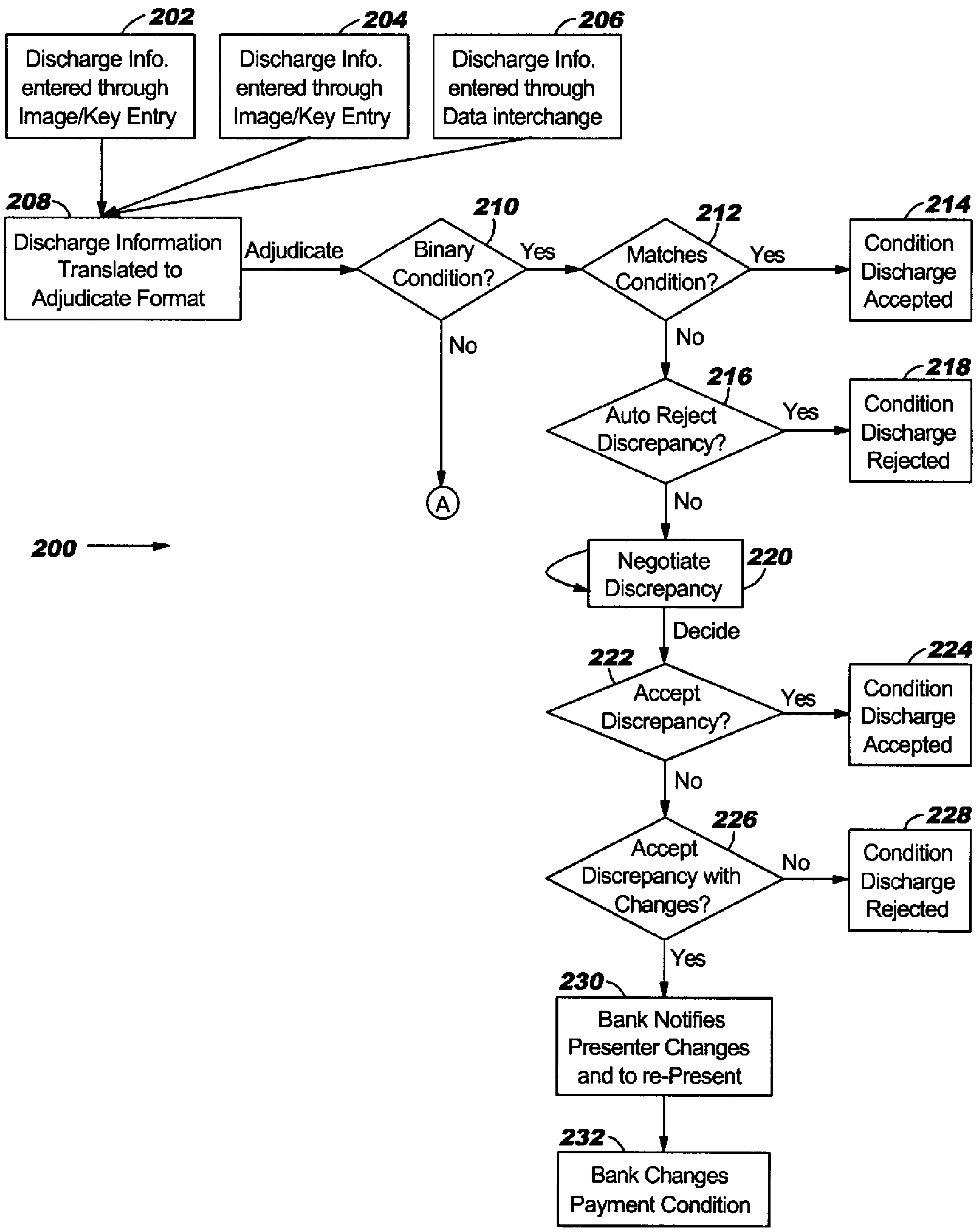

202
Discharge Info. entered through Image/Key Entry
204
Discharge Info. entered through Image/Key Entry
206
Discharge Info. entered through Data interchange
208
Discharge Information Translated to Adjudicate Format
Adjudicate
210
Binary Condition?
Yes
No
A
212
Matches Condition?
Yes
214
Condition Discharge Accepted
No
216
Auto Reject Discrepancy?
Yes
218
Condition Discharge Rejected
No
200
Negotiate Discrepancy
220
Decide
222
Accept Discrepancy?
Yes
224
Condition Discharge Accepted
No
226
Accept Discrepancy with Changes?
No
228
Condition Discharge Rejected
Yes
230
Bank Notifies Presenter Changes and to re-Present
232
Bank Changes Payment Condition

FIG. 2B

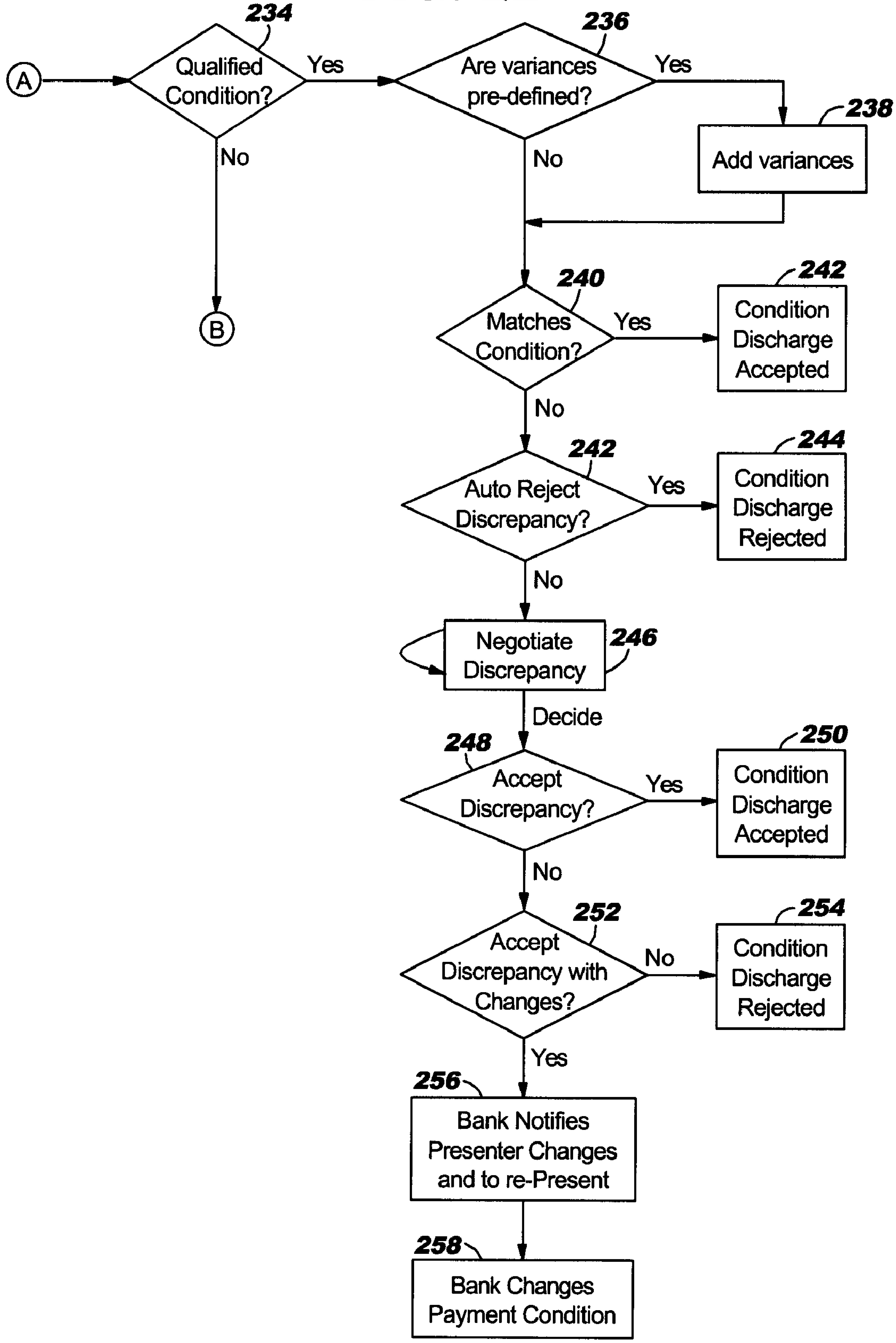
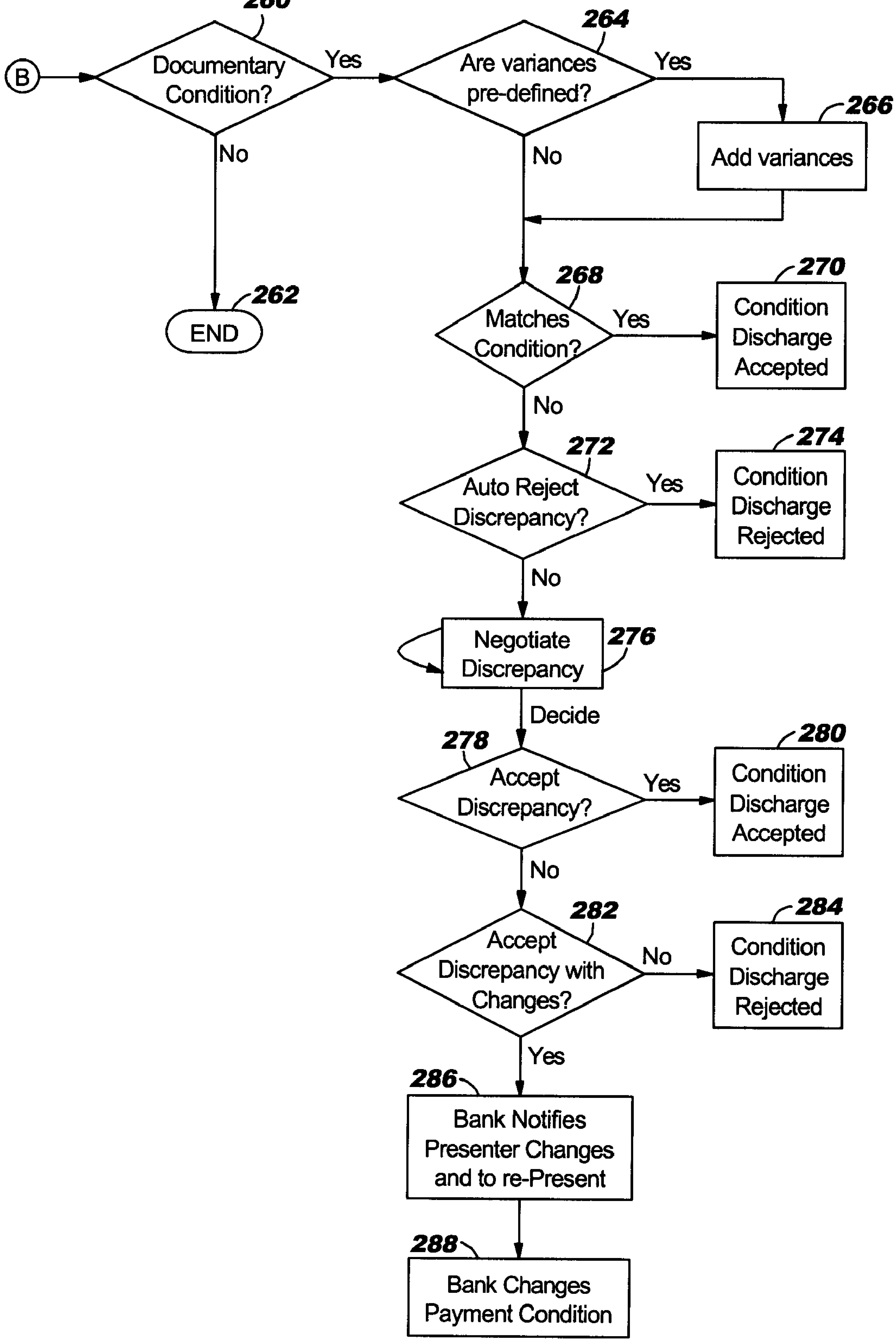
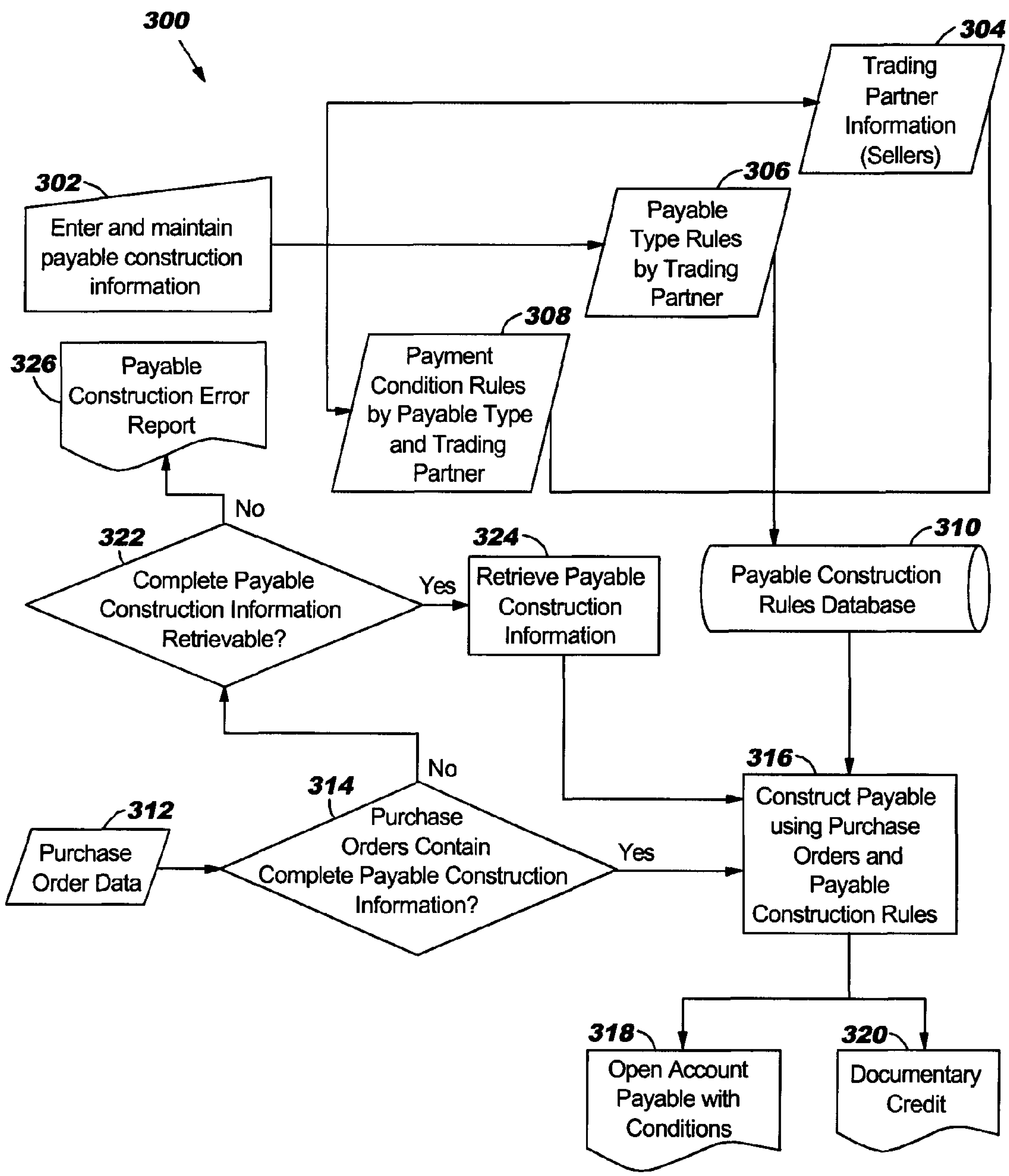

A
234
Qualified Condition?
Yes
No
B
236
Are variances pre-defined?
Yes
No
238
Add variances
240
Matches Condition?
Yes
No
242
Condition Discharge Accepted
242
Auto Reject Discrepancy?
Yes
No
244
Condition Discharge Rejected
246
Negotiate Discrepancy
Decide
248
Accept Discrepancy?
Yes
No
250
Condition Discharge Accepted
252
Accept Discrepancy with Changes?
No
Yes
254
Condition Discharge Rejected
256
Bank Notifies Presenter Changes and to re-Present
258
Bank Changes Payment Condition

FIG. 2C



B
Documentary Condition?
260
Yes
No
END
262
Are variances pre-defined?
264
Yes
No
Add variances
266
Matches Condition?
268
Yes
No
Condition Discharge Accepted
270
Auto Reject Discrepancy?
272
Yes
No
Condition Discharge Rejected
274
Negotiate Discrepancy
276
Decide
Accept Discrepancy?
278
Yes
No
Condition Discharge Accepted
280
Accept Discrepancy with Changes?
282
No
Yes
Condition Discharge Rejected
284
Bank Notifies Presenter Changes and to re-Present
286
Bank Changes Payment Condition
288

FIG. 3


300
304
Trading Partner Information (Sellers)
302
Enter and maintain payable construction information
306
Payable Type Rules by Trading Partner
308
Payment Condition Rules by Payable Type and Trading Partner
326
Payable Construction Error Report
No
322
Complete Payable Construction Information Retrievable?
Yes
324
Retrieve Payable Construction Information
310
Payable Construction Rules Database
No
314
Purchase Orders Contain Complete Payable Construction Information?
312
Purchase Order Data
Yes
316
Construct Payable using Purchase Orders and Payable Construction Rules
318
Open Account Payable with Conditions
320
Documentary Credit

SYSTEM AND METHOD TO MANAGE SUPPLY CHAIN SETTLEMENT, RISK AND LIQUIDITY

CROSS REFERENCE To RELATED APPLICATIONS

This application is related to U.S. provisional application No. 60/481,470, filed Oct. 6, 2003, entitled System and Method to Manage Supply Chain Settlement, Risk and Liquidity, naming William J. Jetter, Paul A. Johnson, Cheryl B. Sill, Mark D. Zanzot, Michael J. Collis, Sanjay H. Mody and David G. Corral as inventors. The contents of the provisional application are incorporated here by reference in their entirety, and the benefit of the filing date of the provisional application is hereby claimed for all purposes that are legally served by such claim for the benefit of the filing date.

BACKGROUND OF INVENTION

The present invention relates to supply chain management, and more particularly to a system and method to manage supply chain settlement, risk and liquidity.

Doing business electronically or eBusiness is a common means and possibly a preferred means of doing business for some organizations today. Managing the creation and flow of data between buyers and sellers, settling discrepancies, transferring funds and other operations normally conducted during a transaction can be a challenge, particularly in an electronic or Internet environment. Electronic purchase orders must be created, recorded and tracked. Similarly, corresponding electronic accounts payable instruments must also be created, recorded and tracked. Rules or conditions established by a buyer that a seller must satisfy before payment may also need to be taken into account and tracked to determine if and when satisfied. Electronic invoices, trade documents and the like also need to be created, stored and tracked for satisfaction. Different types of payable instruments may also be used and any system needs to be able to manage any of the different types of instruments. There may also be discrepancies between the payment conditions set by a buyer and discharge information presented by a seller that may need to be resolved.

SUMMARY OF INVENTION

In accordance with an embodiment of the present invention, a system to manage a supply chain may include a purchase order management module operable on a processor to electronically receive purchase order information from a buyer and to store and track information associated with each purchase order. The system may also include an invoice and trade document management module to electronically store, aggregate and manage invoices and trade documents related to each purchase order and information required for presentment and reconciliation of each purchase order.

In accordance with another embodiment of the present invention, a system to manage a supply chain may include a purchase order management module operable on a processor to electronically receive purchase order information from a buyer and to store and track information associated with each purchase order. The system may also include an invoice and trade document management module to electronically store, aggregate and manage invoices and trade documents related to each purchase order and required for presentment and reconciliation of each purchase order. A payment construction module may be provided to create a payable instrument in response to the purchase order information. An agreement management module may warehouse, adjudicate and provide status reporting on payment conditions related to each purchase. A collaboration and workflow module may support and manage workflow between the other modules and between the buyer and a seller.

In accordance with another embodiment of the present invention, a method to manage a supply chain may include creating a payable instrument in an electronic or digital format in response to purchase order information. The method may also include settling the payable instrument in response to adjudicating any payment conditions.

In accordance with another embodiment of the present invention, a method to manage a supply chain may include receiving purchase order information from a buyer electronically or digitally. The method may also include creating an accounts payable instrument in response to receiving the purchase order information. The accounts payable instrument may be created according to rules or conditions established and maintained by the buyer. The method may further include receiving an invoice and trade documents from a seller and adjudication any payment conditions. The method may further include resolving any discrepancies or disputes between a payment condition set by the buyer and discharge information presented by the seller and settling the accounts payable instrument in response to resolving any discrepancies.

In accordance with another embodiment of the present invention, a computer-readable medium having computer-executable instructions for performing a method may include creating a payable instrument in an electronic or digital format in response to purchase order information. The method may also include adjudicating any payment conditions and settling the payable instrument in response to adjudicating any payment conditions.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a block diagram of a system to manage a supply chain in accordance with an embodiment of the present invention.

FIGS. **2**A, **2**B and **2**C (collectively FIG. **2**) are a flow chart of an example of a method of operation of an Agreement Management module in accordance with an embodiment of the present invention.

FIG. **3** is a flow chart of an example of a method of operation of a Payment Construction module in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

The following detailed description of preferred embodiments refers to the accompanying drawings which illustrate specific embodiments of the invention. Other embodiments having different structures and operations do not depart from the scope of the present invention.

FIG. **1** is a block diagram of a system **100** to manage a supply chain in accordance with an embodiment of the present invention. The system **100** and method for managing a supply chain including managing supply chain settlement, risk and liquidity enables a third-party financial service provider, such as a bank or the like, to manage the payables process for a buyer **102** in international and domestic trade. The buyer **102** may use a purchase order **104** to communicate with the service provider or system **100**. The system **100** may manage all of the process that starts with the receipt of the purchase order **104** or purchase order information and may end with a payment a seller **106** to settle a payable instrument.

The buyer **102** only needs to send purchase order information **104** to the system **100** and the system **100** may receive invoice information **128** from the seller to match to and close the purchase order **104**. The system **100** manages the process associated with the settlement of either international or domestic trade.

The system **100** may support various payables terms like payment under documentary credits and open account to give buyers **102** the flexibility to manage their settlement risk differently for each seller relationship. It has the added benefit of enabling the buyer **102** to attach payment conditions to the open account payable to manage the performance risk of the seller **106** without incurring the credit expense of a documentary credit.

The system **100** may provide data translation and integration technologies that support presentment and receipt of information represented in paper, facsimile, via the Internet or similar means and structure electronic data integration formats. The system **100** does not require all users to conform to a common set of electronic integration technologies. The system **100** uses technologies that capture and translate information from their existing data communication capabilities into a common data structure or predetermined electronic format that may be used by the system **100**.

The system **100** may support interactive and on-line collaboration tools to enable buyers **102** and sellers **106** to negotiate and document discrepancies or disputes.

The system **100** may include a payment construction module **108** to create payables in electronic or digital form to be managed by the system **100** on behalf of the Buyer **102**. A purchase order management module **110** may record purchase orders **104** in a database **111** within the purchase order management module **110**. The purchase order management module **110** may store and keep track of all information associated with each purchase order **104**. After recording a purchase order **104**, the purchase order management module **110** may send the purchase order information to the payment construction module **108**. The payment construction module **108** may sort the purchase orders by criteria predefined by the buyer **102** to create accounts payable instruments. The accounts payable instruments may be managed by the bank on behalf of the buyer **102** up to and including settlement. The system **100** may support the ability to define various payable instruments. Examples of the payable instruments may include, but is not limited to documentary credit instruments used for international trade finance and open account payable instruments used for international or domestic trade. The open account payable instruments may be payable on the seller **106** fulfilling, or discharging, payment conditions set by the buyer **102** before payment will be made to the seller **106**. The creation of any payable instrument may be controlled in the system **100** by a set **109** of rules that may be established and maintained by the buyer **102** on the system **100** in payment construction module **108**.

In the case of documentary credits, the payment construction module **108** will group purchase orders by seller **106**, shipment date or other criteria established by the buyer **102**. The seller **106** may be referred to as the exporter in an international trade context. The payment construction module **108** may generate a documentary credit in accordance with the most current Uniform Customs and Practices rules established by the International Chamber of Commerce. The payment construction module **108** may be adapted to transmit information or data to purchase order management module **110** to update the purchase order management module **110** and to indicate which purchase orders **104** may be covered under the documentary credit. The payment construction module **108** may also send the documentary credit information to the bank **134**, service provider or issuer that issues the documentary credit. The documentary credit may be sent to the issuing bank **134** in paper or electronic formats. In an alternate embodiment of the present invention, the system **100** has the ability for the issuing bank to use an agreement management module **112** of the system **100** to manage the discharge of documentary credit payment terms in whole or in part.

As previously discussed, for any type of payable instrument, the buyer **102** can establish a set **109** of rules or conditions that must be discharged by the seller **106** before payment may be made to the seller **106**. The payables or payment construction module **108** may support any of the following three methods of payment or settlement separately or in combination with any other method:

1. Binary Condition: sets a condition that can be discharged through a True/False response. An example of such a condition is: "Order has been shipped."
2. Qualified Condition: sets a condition that can be compared against a qualified value to determine whether the condition has been discharged. An example of such a condition is: "Order has been shipped before Jun. 19, 2003," where Jun. 19, 2003 is the qualified condition to be discharged.
3. Documentary Condition: sets a condition on the presentment document, whether in paper, facsimile or electronic format, that provides evidence that the condition has been discharged. An example of such as condition is: "Seller presents Bill of Lading for Order to Buyer no later than Jun. 19, 2003." Note that the documentary condition can include a qualified condition, which in this example is the latest shipment date.

In the case when the payment construction module **108** constructs a documentary credit, the payment conditions may be established in accordance with the most current Uniform Customs and Practices rules as established by the International Chamber of Commerce. Additionally, the payment conditions may be set with an expiration date. The expiration date may be the date on which the payment conditions and any associated payment obligation payable on full discharge of the payment condition becomes void if any payment condition has not been fully discharged.

The system **100** may also include an agreement management module **112** to warehouse, adjudicate and provide status reporting on the payment conditions. Payment conditions may be warehoused in a data storage device **113** associated with the agreement management module **112** until all of the payment conditions are fully adjudicated or payment conditions expire due to un-discharged conditions. The agreement management module **112** may adjudicate payment conditions by tracking whether payment conditions have been discharged. Seller discharge information may be passed by a collaboration and workflow module **114** to the agreement management module **112**. The agreement management module **112** may compare the seller discharge information to the payment conditions to determine through the use of a programmed system whether the payment conditions have been discharged. The agreement management module **112** can compare conditions and discharge information on an exact match or match made within predefined variances set by the buyer **102**. A variance can be established for a qualified or documentary condition. An example of a qualified conditional variance is "Invoice amount can be greater than or less than 3% of the purchase order value."If the adjudication function in the agreement management module **112** discharges all payment conditions, that is, all conditions have been made, the agreement management module **112** may update the status of purchase orders **104** tied to an open account payable indicating that all payment conditions have been discharged. The agreement management module **112** may perform one of the following three processes:

1. If the payable is on documentary credit payment terms, the agreement management module **112** reports the adjudication results to the bank trade finance department or system **134** to use in their documentary credit document negotiation process and closes the payable record.
2. If the payable is on open account payment terms and the buyer **102** has recorded standing instructions for the bank to settle the payable electronically on fully discharged conditions, the bank will settle the payable on behalf of the seller **106** by a process that debits the bank account of the buyer **102** and credits the bank account of the seller **106**. The agreement management module **112** then closes the payable record.
3. If the payable is on open account payment terms and the buyer **102** has not recorded standing instructions for the bank to settle the payable electronically on fully discharged conditions, the module closes the payable record.

A feature of the adjudication function of the agreement management module **112** may be to resolve discrepancies between the payment condition set by the buyer **102** and discharge information presented by the seller **106**. If the adjudication function cannot reconcile discharge information to a payment condition, it records a discrepancy between the condition and discharge information. For discrepancies, the agreement management module **112** performs one of the following three processes:

1. If the buyer **102** has established predefined payment condition variances, the agreement management module **112** does nothing.
2. If the buyer **102** has not established predefined payment condition variances or the discharge information exceeds the variance amounts, a standing instruction may be set to reject all discrepancies. The agreement management module **112** may report the discrepancy to the buyer **102** and may report to the seller **106** that the discharge information created a discrepancy and has been rejected.
3. If the buyer **102** has not established predefined payment condition variances or the discharge information exceeds the variance amounts, a standing instruction may be set to review all discrepancies. The agreement management module **112** may report to the buyer **102** through the purchase order management module **110** that there are discrepancies. Buyer **102** has the option to resolve the discrepancies interactively using a web browser negotiation tool **114** or the like. The web browser negotiation tool **114** may utilize Internet Relay Chat (IRT) and Simple Mail Transport Protocol (SMTP) or similar technologies. The web browser negotiation tool **114** may be provided through a collaboration and workflow module **116**. The web browser negotiation tool **116** may support online, interactive chat or off-line email communication protocols. The web browser negotiation tool **114** may also note the status of any discrepancy on-line during the negotiation process. The buyer **102** and the seller **106** can negotiate to resolve the discrepancy towards the following outcomes:

a. The buyer **102** may accept the seller discharge information and the payment condition may be closed as fully discharged.
b. The buyer **102** may reject the seller discharge information and the payment condition may remain un-discharged. The seller **106** may re-present discharge information or the payment condition may expire in accordance with the expiration date set by the buyer **102**.

FIGS. **2**A, **2**B and **2**C are a flow chart of an example of a method of operation of the agreement management module **112** in accordance with an embodiment of the present invention to perform an adjudication function. The agreement management module **112** may also provide status reporting on the payment condition. The agreement management module **112** may report the status of outstanding, adjudicated, partially adjudicated, discrepant, closed and expired payment conditions. The status reporting function of the agreement management module **112** can also aggregate reporting of payables and conditional payments process under other systems not managed by the bank. This aggregation feature can report on the status of documentary credits processed by other issuing banks or open account items processed by banks or non-bank service providers, collectively called "e-payments."

The collaboration and workflow module **116** may support functions, such as collaboration, presentation, workflow, authorization and entitlements, digital rights management (DRM) and the like, to manage the workflow of information within the system **100** and between the system **100**, buyer **102**, seller **106** and third-party trade service providers. The collaboration function of the collaboration and workflow module **116** may support web-based collaboration tools to enable the buyer **102** and seller **106** to negotiate discrepancies, or disputes, arising from the discharging of payment conditions. As previously described, the tool may support Internet Relay Chat (IRC) and Simple Mail Transport Protocols (SMTP) technologies or the like for the buyer **102** and seller **106** to communicate on-line or off-line to resolve any discrepancies.

The presentation function of the collaboration and workflow module **116** may store information on preferred methods for communicating with parties to a transaction processed in the system **100**. The system **100** may support paper, web, email, facsimile or portable document format (PDF) and structured document formats that may include standardized electronic data interchange (EDI), extensible markup language (XML) or the like and proprietary standards. Users of the system **100** may define more than one presentation format depending on the information context and stage of processing in the system **100**. For example, the buyer **102** may want to send the bank or system **100** information using EDI purchase order formats, negotiate discrepancies with the seller **106** interactively through a web browser and receive status reports through email.

The workflow function or feature of the collaboration and workflow module **116** may route information internally within the system **100** and externally with users or buyers **102** and sellers **106** of the system **106** in accordance with their presentation preferences and processing steps.

The authorization and entitlements functions and features of the collaboration and workflow module **116** may maintain records of persons authorized to use the system **100**, their roles in processing workflow and their entitlements to create, modify, delete or view information on the system **100**.

The digital rights management (DRM) function or feature of the collaboration and workflow module **116** may manage the rights to and ownership of electronic title documents, where the holder of the document has ownership of a good referenced in the document. A bill of lading is an example of a title document used in international trade. DRM manages which user is the owner, or holder, of the electronic document in the system **100**. The DRM function may also support one user transferring holder-ship of electronic documents to another user on or off the system **100**.

The system **100** may also include an image capture and key entry module **118**. The image capture and key entry module

118 may support users of the system 100, whether they are sellers 106 submitting conditional payment discharge information or internal bank users using the agreement management module 112, that do not present information or documents electronically into the system 100. The image capture and key entry module 118 may support the presentment of non-electronic information and documents, such as paper documents 120 or the like. The image capture and key entry module 118 includes an image capture function or feature wherein paper documents may be scanned by a scanner or the like to create an electronic image of the document. A user of the image capture and key entry module 118 may select a predefined document template that the module 118 may use to locate information on the electronic document image. The image capture and key entry module 118 may then use optical character recognition (OCR) or the like to read information in the document and to covert the information into Unicode encoded data or the like that can be stored and processed by the other modules in the system 100. The electronic document images may be stored in an archive 122, available for retrieval by users of the system 100.

A feature of the image capture and key entry module 118 may permit users to manually enter information into the system 100 using predetermined templates presented to the user using a web browser 124 or the like operating on a processor 125. An input device 140, such as a keyboard or the like, may be used to enter information onto a predetermined template presented to the user or seller 106 on a monitor or display, such as display 127. The module 118 has the ability to force secondary verification and release of the manually entered data through visual inspection or re-entry of key data by another user of the system 100.

In operation, the purchase order management module 110 manages an interface between the buyer 102 and the system 100. The interface may begin with a buyer 102 sending the system 100 purchase order information 104 in a transmission of a structured electronic format or interactively through a web browser, such as browser 129. The browser 129 may operate on a processor 130 associated with the buyer 102. A display 131 and input/output (I/O) devices 132, such as a keyboard, pointing device, voice recognition feature or the like, may be used by the user or buyer 102 to enter and transmit purchase order information and otherwise interact with the system 100. The purchase order management module 110 may warehouse purchase orders 104 received from the buyer 102 and send them to the payment construction module 108. The buyer 102 may obtain all reporting on the status of purchase orders in the system through the purchase order management module 110.

An invoice and trade document management module 126 may manage the interface between the seller 106, and optionally the bank or the like, and the system 100 which may be hosted by a bank or other financial institution. The interface may begin with a seller 106 sending the system 100 invoice and trade document information 128 in a transmission of a structured electronic format or interactively through a web browser, such as browser 124. The invoice and trade document management module 126 may warehouse invoices and trade document orders 128 received from the seller 106 and may send them to the agreement management module 112 for adjudication against payment conditions associated with a payable instrument to the seller 106. The seller 106 may obtain all reporting on the status of purchase orders 104 in the system through the invoice and trade document management module 126.

The invoice and trade document management module 126 may also support a function to create documents that conform to the payment conditions of a payable instrument to the seller 106. The function may be accessed by the web browser 124, that presents the original purchase order(s) 104 and associated payment conditions to the seller 106 with pre-define trade documents that need to be generated to be submitted into the system 100 to discharge the payment conditions. The system 100 may use information from the purchase order(s) 104 to populate data in the trade documents to be generated. The system 100 or invoice and trade document management module 126 may prompt the user or seller 106 to add any required information not populated automatically by the module 126 from data obtain from the purchase order(s) 104. The prompt may be presented to the user or seller 106 on the display 127. The seller 106 may enter the information via the input device 140, such as a keyboard, voice recognition system or the like.

An example of operation of the system 100 including the processing flow of information between modules of the system 100 and between the system 100 and its users (buyers 102, sellers 106 and bank employees) may be described as follows. The buyer 102 may define rules for processing purchase orders 104 and payables or payable instruments on the system 100 that may be sent to, stored and implemented by the payment construction module 108. The buyer 102 may also define document presentment preferences that may be sent to the collaboration and workflow module 116 and implemented by the module 116. The processing rules may cover construction of payables instruments, payment conditions, variances, discrepancy processing and the like.

Buyers 102 may enter purchase order information 104 into the purchase order management module 110 of the system 100 by transmitting purchase order information 104 in standardized, structured data formats. Alternatively, the purchase order information 104 may be interactively entered into the purchase order management module 110 of the system 100 using a web browser interface, such as browser 128. The purchase order management module 110 may send the purchase order information 104 to the payment construction module 108. The payment construction module 108 may create a documentary credit payable instrument in electronic or digital form and may send it to an issuing bank's trade finance system 134 or the like for further processing. Alternatively, the payment construction module 108 may create an open account payable in electronic or digital form with payment conditions and send it to the agreement management module 112. The system 100 may also send payment condition information for the documentary credit to the agreement management module 112 if the bank or financial institution wants to use this to manage the documentary credit payment terms wholly or partially.

The agreement management module 112 may send updated purchase order information to the collaboration and workflow module 116 to route to different elements of the system 100 or to the buyer 102 or seller 106. The collaboration and workflow module 116 may send updated purchase order information to the purchase order management module 110 including information on payables instruments, such as documentary credit instruments or open account payables associated with purchase orders. The agreement management module 112 may send any open account payables and associated payment conditions to the collaboration and workflow module 116 to route to the invoice and trade document management module 126 to present the details to the seller 106.

The documentary credit issuing bank 134 may enter information from paper trade documents into the image capture and key entry module 118 in order to enter conditional payment discharge information into the system 100. Alternatively, the seller **106** may submit paper documents **120** into the image capture and key entry module **118** to image documents and use optical character recognition (OCR) to capture conditional payment discharge information into the system **100**. The seller **106** may submit conditional payment discharge information and documents electronically to the invoice/trade management module **126** or use the trade document creation utility of the invoice/trade document Management module **126**. The image capture and key entry module **118** may send conditional payment discharge information to the invoice/trade document management module **126** for further routing and processing in the system **100**. The invoice/trade document management module **126** may route the conditional payment discharge information to the collaboration and workflow module **116**. The collaboration and workflow module **116** may route the conditional payment discharge information to the agreement management module **112**. If there are discrepancies between the payment condition and discharge information the agreement management module **112** may route discrepancy information to the collaboration and workflow module **116**. The buyer **102** and seller **106** may use the discrepancy negotiation tool **114** in the collaboration and workflow module **116** to resolve any discrepancies.

The results of any third-party e-payment activity from third party ePayment networks **135** or the like, that the buyer **102** desires to aggregate with their purchase order activity may be consolidated and reporting through the agreement management module **112**. If there are no discrepancies, the agreement management module **112** may send payment initiation information on behalf of the buyer **102**, if so pre-authorized by the buyer **102**, to the bank's payment system **136** to settle the payable with the seller **106**. The agreement management module **112** may update the purchase order management module **110** with invoice and payment information. The buyer **102** may use the invoice detail to close out open account payable information linked to the purchase order **104**.

FIGS. 2A, 2B and 2C (collectively FIG. 2) are a flow chart of an example of a method **200** of operation of the agreement management module **112** in accordance with an embodiment of the present invention. In blocks **202**, **204**, or **206**, discharge information may be entered into the module **112** via the Image capture and key entry module **118** or via data interchange between other modules of the system **100**. In block **208** the discharge information may be translated into a format to permit adjudication of the account payable instrument. In block **210**, a determination may be made if a predetermined or binary condition has been met. If the condition has been met, the method **200** may advance to block **212** to determine if conditions defined by the buyer **102** have been met. If the condition or conditions defined by the buyer **102** for settlement have been met or matches the conditions in block **212**, the condition discharge is accepted in block **214** and payment may be made to the seller **106**. If the condition does not match in block **212**, the method **200** may advance to block **216**. In block **216**, a determination may be made if the discrepancy in terms between the buyer **102** and seller **106** is one defined as calling for automatic rejection. If so, the condition discharge may be rejected in block **218**. If the condition is not one calling for automatic rejection the discrepancy may be negotiated in block **220**. As previously described, the negotiation tool **114** of the collaboration and workflow module **116** may be used by the buyer **102** and seller **106** to resolve the discrepancy. In block **222**, a determination may be made if the discrepancy is accepted by the buyer **102** and if so, the obligation may be discharged in block **224**. In block **226**, a determination may be made if the discrepancy is acceptable with changes. In the discrepancy is not acceptable with changes in block **226**, the condition to discharge the obligation may be rejected in block **228**. If the discrepancy is acceptable with changes in block **226**, the bank may notify the presenter or seller **106** in block **230** of the changes and request the presenter to re-present. The bank may then change the payment conditions in block **232**.

If the predetermined binary condition is not met in block **210**, the method **200** may advance to block **234**. In block **234**, a determination may be made if a qualified condition is met. If the qualified condition is met in block **234**, the method **200** may advance to block **236**. In block **236**, a determination may be made if there are any predefined variances. If there are predefined variances, the variances may be added in block **238** to determine if the obligation or invoice can be satisfied based on the variances. If no variances are predefined in block **236** or after adding the variances in block **238**, a determination may be made in block **240** if the condition or conditions are matched for settlement. If the condition matches, the condition discharge may be accepted in block **242** and settlement of the obligation or invoice may be made. If the condition is not matched in block **240**, a determination may be made in block **242** to automatically reject the discrepancy. If the discrepancy is automatically rejected in block **242**, the condition discharge may be rejected in block **244**. If the discrepancy is not automatically rejected in block **242**, the discrepancy may be negotiated in block **246** using the negotiation tool **114** of the collaboration and workflow module **116**. If the discrepancy is accepted in block **248**, the condition discharge may be accepted in block **250**. If the discrepancy is not accepted in block **248**, a determination may be made in block **252** if the discrepancy has been accepted with changes. If not, the condition discharge may be rejected in block **254**. If the discrepancy has been accepted with changes, the bank may notify the presenter or seller **106** of the changes in block **256** to amend the presentment and re-present the invoice. The bank may change the payment conditions in block **258**. If a qualified condition is determined not to exist in block **234**, the method may advance to block **260**. In block **260**, a determination may be made if a documentary condition exists. If a documentary condition does not exist, the method **200** may end at termination **262**. If a documentary condition does exist in block **260**, the method **200** may advance to block **264** to determine if any variances have been predefined. The method **200** may then proceed from block **264** to block **288** similar to that previously described in blocks **236**-**258**.

FIG. **3** is a flow chart of an example of a method **300** of operation of the Payment Construction module **108** in accordance with an embodiment of the present invention. In block **302**, payable construction information may be entered by a buyer **102** or other user and maintained by the module **108**. The payable construction information may include trading partner information (seller information) in block **304**, payable type rules by trading partner in block **306**, payment condition rules by payable type and trading partner in block **308** and the like. This information and rules may be stored in a payable construction rules database **310**. In block **312**, purchase order data may be entered by the buyer **102** or other user. In block **314**, a determination may be made if the purchase order or orders contain complete payable construction information. If the purchase order or orders contain complete construction information, the method **300** may advance to block **316** and a payable instrument may be constructed using the purchase order information and applying any applicable payable construction rules from the database **310**. An open account payable with conditions **318** or a documentary credit instrument **320** may be generated.

If the purchase order or orders do not contain complete payable construction information in block **314**, the method **300** may advance to block **322**. In block **322**, a determination may be made if complete payable construction information may be retrievable by going back to the buyer **102** or from other sources. If complete payable construction information is not retrievable in block **322**, a payable construction error report **326** may be generated. The payable construction error report **326** may be presented to the buyer. The buyer may then enter any missing information. If complete payable construction information may be retrieved in block **322**, the payable construction information may be retrieved in block **324** from a database, such as the rules database **310** or other data source containing the missing information, or the user may be prompted to enter the missing information. The method **300** may then advance to block **316** where a payable instrument may be constructed using the purchase order information and payable construction rules from the database **310**.

The system **100** and modules forming the system **100** may be embodied in one or more data processing devices or the like. Elements of the present invention may be embodied in hardware and/or software as a computer program code that may include firmware, resident software, microcode or the like. Additionally, elements of the invention may take the form of a computer program product on a computer-usable or computer-readable storage medium having computer-usable or computer-readable program code embodied in the medium for use by or in connection with a system, such as system **100** of FIG. **1**. Examples of such a medium may be illustrated in FIG. **1** as input devices **132** and **140**, communication medium **142** or similar devices. A computer-usable or readable medium may be any medium that may contain, store, communicate or transport the program for use by or in connection with a system. The medium, for example, may be an electronic, magnetic, optical, electromagnetic, infrared or semiconductor system or the like. The medium may also be simply a stream of information being retrieved when the computer program product is "downloaded" through a network such as the Internet. The computer-usable or readable medium could also be paper or another suitable medium upon which the program may be printed.

Although specific embodiments have been illustrated and described herein, those of ordinary skill in the art appreciate that any arrangement which is calculated to achieve the same purpose may be substituted for the specific embodiments shown and that the invention has other applications in other environments. This application is intended to cover any adaptations or variations of the present invention. The following claims are in no way intended to limit the scope of the invention to the specific embodiments described herein.

The invention claimed is:

1. A system to manage a supply chain, comprising:

a purchase order management module operable on a processor to electronically receive purchase orders each purchase order comprising a document received from a buyer to buy at least one of goods or services from a seller, the buyer using the purchase order to communicate with the system so that the system can manage a process that starts with receipt of a purchase order and ends with a payment to the seller to settle a payable instrument, the purchase order management module being managed by a third party entity other than the buyer or seller;

an invoice and trade document management module to receive invoices or trade documents, each invoice is received from the seller and is related to each respective purchase order and required for presentment and reconciliation of each respective purchase order;

an image capture and key entry module to convert non-electronic information into a predetermined electronic format for receipt and use by the invoice and trade document management module;

a database associated with the purchase order management module to store and track information associated with each purchase order; and

a payment construction module to create a payable instrument in response to receiving the purchase orders, wherein the payable instrument comprises an instrument that is payable upon fulfillment of payment conditions, the payment conditions being set by the buyer to be fulfilled prior to the payable instrument being payable.

2. The system of claim **1**, wherein the payment construction module sorts approved purchase orders by a predefined criteria.

3. The system of claim **1**, further comprising a set of rules to control creation of each payable instrument.

4. The system of claim **3**, wherein the payment construction module supports settlement under at least one of a binary condition, a qualified condition and a documentary condition, wherein settlement relates to payment from the buyer upon fulfilling the payment conditions set by the buyer.

5. The system of claim **1**, wherein the payable instrument comprises at least one of a documentary credit instrument and an open account payment instrument.

6. The system of claim **1**, wherein the payment construction module transmits information to the purchase order management module to indicate which purchase orders are covered under a documentary credit instrument.

7. The system of claim **1**, wherein the payment construction module sends documentary credit information to an issuer to issue a documentary credit.

8. The system of claim **1**, further comprising an agreement management module to warehouse, adjudicate and provide status reporting on payment conditions related to each purchase order.

9. The system of claim **8**, wherein the agreement management module adjudicates payment conditions by tracking whether any payment conditions have been discharged.

10. The system of claim **8**, wherein the agreement management module compares seller discharge information to payment conditions to determine whether any the payment conditions have discharged.

11. The system of claim **10**, wherein the agreement management module is programmable to discharge payment conditions on at least one of an exact match comparison or predefined variances from an exact match.

12. The system of claim **1**, further comprising a collaboration and workflow module to support and manage workflow between the other modules and between the buyer and seller, the collaboration and workflow module comprising a negotiation tool to enable the buyer and seller to negotiate and document discrepancies or disputes between the payment conditions set by the buyer and discharge information presented by the seller.

13. The system of claim **12**, wherein the collaboration and workflow module comprises a digital rights management feature to manage rights to and ownership of electronic title documents.

14. The system of claim **1**, wherein the invoice and trade document management module receives invoice information from a seller.

15. The system of claim 14, wherein the invoice information is receivable via one of a printed format, facsimile and a communication network.

16. A system to manage a supply chain, comprising:

a purchase order management module operable on a processor to electronically receive purchase orders, each purchase order comprising a document received from a buyer to buy at least one of goods or services from a seller, the buyer using the purchase order to communicate with the system so that the system can manage a process that starts with receipt of a purchase order and ends with a payment to the seller to settle a payable instrument, the purchase order management module being managed by a third party entity other than the buyer or seller;

an invoice and trade document management module to receive invoices or trade documents, each invoice is received from the seller and is related to each respective purchase order and required for presentment and reconciliation of each respective purchase order;

a payment construction module to create a payable instrument in response to the purchase order information; and

an agreement management module to warehouse, adjudicate and provide status reporting on payment conditions related to each purchase order, the payment conditions being set by the buyer to be fulfilled prior to the payable instrument being payable, wherein the agreement management module is programmable to discharge payment conditions on at least one of an exact match comparison or predefined variances from an exact match.

17. The system of claim 16, further comprising a database associated with the purchase order management module to store and track information associated with each purchase order.

18. The system of claim 16, wherein the payment construction module sorts purchase orders by a criteria predefined by the buyer.

19. The system of claim 16, further comprising a set of rules to control creation of each payable instrument.

20. The system of claim 16, wherein the payment construction module supports settlement under at least one of a binary condition, a qualified condition and a documentary condition.

21. The system of claim 16, wherein the payable instrument comprises at least one of a documentary credit instrument and an open account instrument.

22. The system of claim 16, wherein the payment construction module transmits information to the purchase order management module to indicate which purchase orders are covered under a documentary credit instrument.

23. The system of claim 16, wherein the payment construction module sends documentary credit information to a service provider to issue a documentary credit.

24. The system of claim 16, wherein the agreement management module adjudicates payment conditions by tracking whether any payment conditions have been discharged.

25. The system of claim 16, wherein the agreement management module compares seller discharge information to payment conditions to determine if the payment conditions have been discharged.

26. The system of claim 16, further comprising a negotiation tool to enable the buyer and seller to negotiate and document discrepancies or disputes.

27. The system of claim 26, wherein the negotiation tool comprises a browser to negotiate disputes or discrepancies interactively and on-line.

28. The system of claim 16, wherein the collaboration and workflow module comprises a digital rights management feature to manage rights to and ownership of electronic title documents.

29. The system of claim 16, wherein the invoice and trade document management module receives invoice information from a seller.

30. The system of claim 16, further comprising an image capture and key entry module to convert non-electronic information into predetermined electronic format for receipt and use by the invoice and trade document management module.

31. A method to manage a supply chain, comprising:

creating a payable instrument in an electronic format using a computer in response to purchase order information of a purchase order, each purchase order comprising a document received from a buyer to buy at least one of goods or services from a seller, the buyer using the purchase order to communicate with the system so that the system can manage a process that starts with receipt of a purchase order and ends with a payment to the seller to settle a payable instrument, wherein said creating a payable instrument is performed by an entity other than the buyer or seller;

converting any non-electronic information into a predetermined electronic format

adjudicating any payment conditions, the payment conditions being set by the buyer to be fulfilled prior to the payable instrument being payable so that the payable instrument is only payable when the payment conditions are fulfilled; and

settling the payable instrument in response to adjudicating any payment conditions.

32. The method of claim 31, wherein adjudicating any payment conditions comprises at least one of discharging any payment conditions, accepting any payment condition discrepancies or accepting any payment condition discrepancies with changes.

33. The method of claim 31, further comprising electronically storing invoice and trade document information related to each purchase order.

34. The method of claim 31, wherein creating a payable instrument comprises applying a set of predefined rules.

35. The method of claim 31, wherein adjudicating any payment conditions comprises adjudicating any binary condition, qualified condition or documentary condition.

36. The method of claim 31, wherein creating a payable instrument comprises creating one of a documentary credit instrument and an open account instrument.

37. The method of claim 36, further comprising sending documentary credit information to an issuer to issue a documentary credit.

38. The method of claim 31, further comprising reporting status on payment conditions related to each purchase order.

39. The method of claim 31, wherein adjudicating any payment conditions comprises tracking whether any payment conditions have been discharged.

40. The method of claim 31, further comprising comparing seller discharge information to payment conditions to determine whether any payment conditions are dischargable.

41. The method of claim 40, further comprising discharging any payment conditions on at least one of an exact match between seller discharge information and payment conditions or a predefined variance from an exact match.

42. The method of claim 31, further comprising negotiating any discrepancies or disputes.

43. The method of claim 42, wherein negotiating any discrepancies or disputes comprises using a browser.

44. The method of claim **31**, managing digital rights to and ownership of electronic title documents.

45. A method to manage a supply chain, comprising:

receiving one or more purchase orders from a buyer electronically using a computer, each purchase order comprising a document received from a buyer to buy at least one of goods or services from a seller, the buyer using the purchase order to communicate with the system so that the system can manage a process that starts with receipt of a purchase order and ends with a payment to the seller to settle a payable instrument, wherein the purchase order information is received from an entity other than the buyer or seller;

creating an accounts payable instrument in response to receiving the one or more purchase orders, wherein the accounts payable instrument is created according to rules or conditions established by the buyer;

receiving one or more invoice or trade documents from a seller, each invoice or trade document is received from the seller and is related to each respective purchase order and required for presentment and reconciliation of each respective purchase order;

adjudicating any payment conditions;

comparing seller discharge information to payment conditions to determine whether any payment conditions are dischargable; and

discharging any payment conditions on at least one of an exact match between seller discharge information and payment conditions or a predefined variance from an exact match.

46. The method of claim **45**, wherein adjudicating any payment conditions comprises at least one of discharging any payment conditions, accepting any payment condition discrepancies or accepting any payment condition discrepancies with changes.

47. The method of claim **46**, further comprising tracking adjudication of any payment conditions.

48. The method of claim **45**, wherein adjudicating any payment conditions comprises adjudicating any binary condition, qualified condition or documentary condition.

49. The method of claim **45**, wherein creating a payable instrument comprises creating one of a documentary credit instrument and an open account instrument.

50. A computer-readable medium having computer-executable instructions for performing a method, comprising:

creating a payable instrument in an electronic format using a computer in response to one or more purchase orders, each purchase order comprising a document received from a buyer to buy at least one of goods or services from a seller, the buyer using the purchase order to communicate with the system so that the system can manage a process that starts with receipt of a purchase order and ends with a payment to the seller to settle a payable instrument;

adjudicating any payment conditions, the payment conditions being set by the buyer to be fulfilled prior to the payable instrument being payable so that the payable instrument is only payable when the payment conditions are fulfilled;

settling the payable instrument in response to adjudicating any payment conditions;

comparing seller discharge information to payment conditions to determine whether any payment conditions are dischargable; and

discharging any payment conditions on at least one of an exact match between seller discharge information and payment conditions or a predefined variance from an exact match.

51. The computer-readable medium having computer-executable instructions for performing the method of claim **50**, wherein adjudicating any payment conditions comprises at least one of discharging any payment conditions, accepting any payment condition discrepancies or accepting any payment condition discrepancies with changes.

52. The computer-readable medium having computer-executable instructions for performing the method of claim **50**, wherein creating a payable instrument comprises creating one of a documentary credit instrument and an open account instrument.

53. The computer-readable medium having computer-executable instructions for performing the method of claim **50**, wherein adjudicating any payment conditions comprises adjudicating any binary condition, qualified condition or documentary condition.

54. The computer-readable medium having computer-executable instructions for performing the method of claim **50**, tracking discharge of any payment instruments.

55. The system of claim **12**, wherein the negotiation tool comprises a browser to negotiate disputes or discrepancies interactively and on-line.

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